REMARKS

Claims 1 to 9 and 11 to 20 continue to be in the case.

New claim 21 is introduced.

The language of new claim 21 is based on claim 1.

The Office Action refers to Claim Rejections - 35 USC§ 102

1.

Claims 1-2, 7-9, 11-13 and 20 stand rejected under 35 U.S.C. 102(b) as being anticipated by Scecina(USpat5511223).

With respect to claim 1 and 13, Scecina discloses an apparatus comprising:

1) A modular fieldbus board (Fig 1) comprising a number of fieldbuses (Fig 1 item 40 is the fieldbus module, Fig 5 item 18 shows the fieldbus board itself) connected to a bulk power supply (column 3 lines 64-67).

2) A diagnostic system (Fig 1 item 50 and Fig 4) comprising a monitoring transceiver means (Fig 4 items 12-15) connected to two or more of the number of fieldbuses (Fig 1 items 40) by means of two or more signal injection and/or signal detection points, wherein the points are adapted to inject and/or detect both common mode and differential mode signals (abstract.

According to the knowledge of one of ordinary skill in the art, any two-cable communication line is "adapted to" inject and/or detect such signals. Common mode is simply the average of the two line signals and thus both exist at the same time), and wherein the points are interposed between the bulk power supply and the fieldbus trunk, such that the monitoring transceiver means can detect one or more fieldbus physical layer characteristics between two of the two or more of said points (Figs 4 and 5).

3) A first digital and/or analog interface separate from the field bus trunk and adapted to transmit diagnostic data detected by the monitoring transceiver means directly to an associated digital or analog device (Fig 1 item 82 vs. "test cable and connector" which is the "fieldbus trunk").

Applicants believe that the reference Scecina has nothing in common with the present invention. The testing device of the reference Scecina is different from the diagnostic system of the invention. The testing device of the reference Scecina is not related to a field bus, for instance like the Foundation Fieldbus H1. In the whole US patent 5,511,223 document of Scecina there is no mentioning of a fieldbus. Only the word fieldbus board, item 18, is mentioned. But it remains absolutely unclear in which sense this word fieldbus board is used by the reference Scecina.

In clear contrast the present invention is based on the fieldbus technology, like the Foundation Fieldbus H1. Fieldbus is an industrial network system for real-time distributed control. It is a way to connect instruments in a manufacturing plant. Fieldbus works on a network structure, which typically allows daisy-chain, star, ring, branch, and tree network topologies. With the words of WO99/45621 (page.1, lines.16-24) field buses are electrical apparatuses for communication between, on the one hand, field devices arranged in the area, for instance, at risk of explosion, the so-called field area, examples of said field devices being sensors, actuators and measurement transducers, and, on the other hand, open-loop and closed-loop control systems arranged in the area not at risk of explosion, the so-called control room area. A fieldbus is usually designed as a two-wire line, which simultaneously serves for transmitting the supply power for the connected field devices. In this case, the communication is effected in an analog fashion via

a 0/4 . . . 20 mA current loop or digitally, for example by means of FSK modulation, or by combined analog/digital signal transmission.

It is a feature of the fieldbus technology that it is a communication system with reference against ground surface of what is necessary for measuring common mode signals. The only point against ground is directly after the bulk power supply. The two-wire-cable of the fieldbus, which is connected to the bulk power supply, normally is shielded with a metallic shielding. This will be shown in the explanation sheet for explanation of differential and common mode noise.

2. A diagnostic system for a modular fieldbus board carrying a number of fieldbuses connected to a bulk power supply is claimed in the present application.

The reference Scecina comprises a multi-purpose, digital module with reliability enhancement features including dual diverse processors, diagnostic software and self-testing capabilities (column 2, lines 39-42). But the reference Scecina does not disclose a modular fieldbus board comprising a number of fieldbuses. Fig.1 of Scecina shows a schematic elevational view of an equipment or system cabinet containing multiple modules and other test and maintenance devices. Fig. 1 and fig. 5, item 40, of the reference Scecina indicates not a fieldbus module, but only a module. FIG. 5 is a side elevational view of a module 40.

The wording "fieldbus module" and "fieldbus" (in unique position) do not occur neither in the whole description nor in the claims of the reference Scecina. Therefore Scenica does not teach a fieldbus device and not at all a fieldbus diagnostic system with reference against ground surface for detecting and counterbalancing or go against common mode signals or against differential mode

signals. Likewise the wordings "differential mode" or "differential mode noise" or "differential mode signals" are not found neither in the whole description nor in the claims of the reference Scecina.

However item 40 of the reference Scecina is a module and is typically situated in a module rack 30 alongside other modules 40 (column 3, lines 61-63). One feature of each module 40 is a so called "field bus board", item 18, (column.6, lines 39-40), where the sense of this word remains unclear. On the opposite side of the field bus board 18 there is situated a digital bus board 19 (column.6, line.40), both containing connector halves 18a, 19a. The field bus board 18 and the digital bus board 19 are vertically situated at opposite ends of the module. Printed circuit boards 20 contain connector halves 20a and 20b that mate to 19a and 18a, respectively, and are situated horizontally between the vertical boards (column 6, lines 42-45).

This configuration of the reference Scencina does not contain a number of fieldbuses, there is existing a number of printed circuit boards 20 containing connector halves 20a and 20b. Therefore it remains unclear which is the meaning of the wording field bus board 18 and the specified use of the field bus board 18 remains unclear. But it is clear, that the meaning of the wording field bus board is not used in the sense of the field bus technology, like the Foundation Fieldbus H1 technology.

2. The reference Scecina teaches an electronic means for verifying that a digital module is installed in the correct location in a system rack (column.2, lines 55-57; column 5, lines 28-30) with a number of physically identical digital modules that each have a different programmed function. Therefore the reference Scecina

provides means for relating the functional information on the nameplate of a digital module to the software program in the module (column 4, lines 61-63). To achieve this goal each module uses two diversly designed processors 1, 2 (fig.4) to ensure that the module output can achieve the "on" or "off" state when desired even if one of the diverse processors fails (column .4, lines 44-46-48 and column 4, lines.56-58). The input signals are proved and evaluated in two ways with the two processors 1, 2.

For verifying that a digital module is installed in the correct location in the system rack, the reference Scecina includes a method for switching between process signals, which are input to the module during normal operation and test signals which are input to verify the operability of the module (column 5, lines 41-44). The testing means consists of signal switching devices 9, 10 and 22, which are contained in the module 40, and test signal generating device 12 and test control device 13 which are external to the module 40. Therefore it's the module itself, which is tested.

A specific testing of the field bus board 18 or of the digital bus board 19 or of the printed circuit boards 20 is not furnished. This is understandable because the testing only shall verify that a module is installed in the correct location in a system rack (column 2, lines 55-57; column.5, lines 28-30).

Referring to the reference Scecina column 5, lines 63 to column 6, lines 1-5 the test signal (T1) performs a checking of the processors 1 and 2 for proper response to the test input signal.

Therefore the reference Scecina does not include signal injection and/or signal detection points, wherein the points are adapted to inject and/or to detect both common mode and differential mode signals. The reason is, because it is not the goal of the reference Scecina to detect and counterbalance or go against common mode signals or against differential mode signals. Likewise the wordings "differential mode" or "differential mode noise" or "differential mode signals" do not exist neither in the whole description nor in the claims of Scecina.

As pointed out by a sheet "Differential and Common Mode Noise" noise is classified into two types according to the conduction mode. The first type is differential mode noise, which is conducted on the signal (VCC) line and GND line in the opposite direction to each other. The second type is common mode noise, which is conducted on all lines in the same direction. With an AC power supply line, for example, noise is conducted on both lines in the same direction. With a signal cable, noise is conducted on all the lines in the cable in the same direction.

It is an important feature of the invention to detect both common mode and differential mode signals and to counterbalance and to eliminate such signals. This is very well shown in fig.1:of the present application the common mode signal injection and detection points 2, 4 and 6 are drawn as ellipses, which clasp both of the lines of the two-wire line, connected to the bulk power supply 1. The reason is, because common mode signals are conducted on all lines in the same direction.

The differential mode signal injection and signal detection points 7 are drawn, however, as ellipses, which clasp always only one of the lines of the two-wire line, connected to the bulk power supply 1. The reason is, because differential

mode signals is conducted on the signal (VCC) line and GND line in the opposite direction to each other.

On the contrary the reference Scecina teaches two ways for the use of the architecture of the processors 1 and 2. In normal mode the signals IN1 are processed to the two processors 1, 2. After switching to the test mode the test signals T1 are also processed to the two processors 1, 2. The main feature of the reference Scecina is to make available the two processors in each module, with connected logic for producing redundant signal processing and for creating a trip output when faults are detected either in the process or in the functioning of the module.

In fig. 1 of the reference Scecina the item 82 does not specify a fieldbus trunk, but only a data bus to connect the modules with a test rack and a maintenance workstation. According to the reference Scecina, column 4, lines 4-12, a data bus 82 is used for communications between the modules and the auxiliary equipment. The data bus handles test command and data signals only. A removable cable and connector assembly is used for connecting test input and output signals between the test rack and the module. No permanent connection between the module and the test rack or test control device is required during normal (non-test) operation.

On the contrary the invention creates a diagnostic system for a modular fieldbus board carrying a number of fieldbuses, which are permanently connected to the fieldbus trunk (see PCT/GB2004/004077, page.4, lines.15-19). Each fieldbus trunk is always connected to one or more field devices. All common mode signal injection and detection points and all differential mode signal injection and signal

detection points also are permanently connected to each field bus trunk (see PCT/GB2004/004077, page. 4, lines 25-31, page 5, lines.1-2).

Therefore it is not admissible to compare the removable cable and connector assembly (Scecina column 4, line.7) of data bus 82 with the field bus trunks of the field bus technology of the invention.

With respect to claim 2, Scecina discloses the fieldbus physical layer characteristics comprise one or more of: over/under termination, noise/ripple level, signal level, signal bias, signal jitter, signal ringing, signal distortion, signal attenuation, cross talk, unbalance, and earth leakage (column 4 lines 21-50).

Regarding the statements in the Office Action with respect to claim 2 of the invention (Office Action, page 3, lines11-14) it must be pointed out, that the reference Scecina, in column 4, lines.21-50 does not teach the technical teachings of claim 2. The reference Scecina, in column 4, lines 18-20 only teaches, that, *due to the diverse processor hardware, the design reduces the susceptibility of the module to common mode failures*. This is a completely general statement without any specific technical relationship.

With respect to claim 7, Scecina discloses a first digital and/or an analogue interface, is adapted to receive operating commands from an associated digital or analogue device (Fig 1 item 60 and claim 2).

Referring the statements in the Office Action with respect to claim 7 of the present application (Office Action, page 3, lines 15-17) fig. 1, item 60, shows an

equipment rack 60 (Scenica, column 4, lines 3-4), like the equipment rack 50 (Scecina, column 4, lines.3-4). Scecina, claim 2 (column 8, lines 19-28) does not teach monitoring transceiver means provided with a first digital and/or an analogue interface, such that diagnostic data detected and/or alarms created by the monitoring transceiver means in use are transmitted to a digital or analogue device operated by a user, and such that commands are sent in use from the user operated digital or analogue device to operate the monitoring transceiver means.

But the reference Scecina, in claim 2 (column 8, lines 19-28) teaches that at least one digital module comprises a field bus board (in which sense whatsoever) at a rear end of said module for analog signals, a digital bus board spaced from said field bus board at a front end of said module for digital signals with a plurality of printed circuit boards connected between said field and digital bus boards, with connection means connected to said field bus board and constructed to connect into a receptacle in a module rack, and front panel means for displaying information concerning said module.

Also the reference Scecina teaches an interface, but fig. 1, item 60, shows an equipment rack 60 (Scecina, c.4, l.3-4) without closer specification. This is not the monitoring transceiver means of the present application.

With respect to claim 12, Scecina discloses signal detection points are disposed within hardware carried on the board (Fig 5).

Referring the statements in the Office Action with respect to claim 12 of the present application (Office Action, page 4, lines 5-6) fig. 5 do not show any signal detection points. It is not apparent where such points should be located:

Item 18 is named field bus board

Item 19 is named digital bus board

Item 20 is named horizontal PC boards

Item 18a, 19a, 20a and 20b is named connector halves

Item 21 is named plugging board.

Therefore Scenica does not show the features of the invention and therefore Scecina has to be set aside.

Reconsideration of all outstanding rejections is respectfully requested.

All claims as presently submitted are deemed to be in form for allowance and an early notice of allowance is earnestly solicited.

Respectfully submitted,

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